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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/450,491 | 11/29/1999 | RYOICHI YOKOYAMA | YKI-0024 | 7688 |
| 23413 | 7590 | 02/12/2004 | EXAMINER | |
| CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002 | | | ABDULSELAM, ABBAS I | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2674 | 19 |

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/450,491

Applicant(s)

YOKOYAMA, RYOICHI

Examiner

Abbas I Abduselam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-6, 9, 11-14 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tornqvist (USPN 5133036) in view of Ishii et al. (USPN 5321536), Nishimura et al. (USPN 4297004) and Ukai et al. (USPN 5223961).

Regarding claims 1, 9, and 17-18. Tornqvist teaches the first electrode structure (9), luminous multilayered thin film structure (10, 11, 12) and second electrode structure (13, 14). See fig 2, and 3. Tornqvist teaches about transparent second electrode structure containing parallel electrode conductors. Tornqvist also teaches that the second electrode structure is provided with a narrow stripe (14) of high electrical conductivity. Moreover, Tornqvist teaches about electroluminescent thin film structure of a display unit and the use of emission filter material. See column 1, lines 7-13, and Column 3, lines 55-65. Tornqvist teaches visible

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emissions achieved by connecting an electric field over two electrodes and light is produced in a phosphor material placed between the electrodes. See col. 1, lines 14-22. However, Tornqvist does not teach connection of a second electrode with a signal supply such that the second electrode is controlled separately from the first electrode. Ishii on the other hand teaches the use of a first electrode and a second electrode in such a way that the second electrode is controllably connected to and separated from the signal line by the photosensitive section. See col. 4, lines 30-36.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify Tornqvist's display system to include Ishii's electrodes configuration with a signal line. One would have been motivated in view of the suggestion in Ishii that the desired connection between an electrode and a signal supply as well as separate control of the electrodes can be achieved by Ishii's electrodes configuration with the signal line. The use of electrodes in conjunction with a signal line helps function the liquid crystal display as taught by Ishii.

Tornqvist has been described above. However, Tornqvist does not teach a multi layer structure having a resistance lower than a resistance of a single layer of the second electrode material. Nishimura on the other hand teaches a multi-layer lead electrode structure having an electrode resistance smaller than the thin-film lead electrodes.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify Tornqvist's display system to adapt Nishimura's multi-layer lead electrode. One would have been motivated in view of the suggestion in Nishimura that the multi layer lead electrode is functionally equivalent to the desired multi layer structure. The use of multi layer lead electrode helps function liquid crystal display system as taught by Nishimura.

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Tornqvist does not teach "a first electrode that is electrically connected to at least one of the thin film transistors and is formed over an insulating layer, which is formed covering the at least one of the thin film transistors." Ukai on the other hand teaches a TFT (16) configured with shielding layer which is covered with a insulating layer (22) deposited almost all over the inside surface of the substrate. See col. 1, lines 40-50.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify display system to adapt the arrangement of TFT (16) as shown in Fig. 3. One would have been motivated in view of the suggestion in Ukai that the TFT along with an insulating layer (22) as configured in Fig. 3 is equivalent to the desired TFT along with covering insulating. The use of TFT with insulating layer helps function an active liquid crystal display system as taught by Ukai.

In addition Ukai teaches (Fig. 3) the use of pixel electrode (15) covered with an insulating layer (24) along with a transparent conductor. See Fig. 3.

Regarding claims 3, and 11, Tornqvist teaches about a thin-film electrode layer, which is partly metallic or a metal alloy. See column 2, lines 22-33.

Regarding claims 4 and 12, see Fig 3 (13, 14)

Regarding claims 5, and 13, Tornqvist teaches about layers (10, 11, 12) between first electrode (9) and second electrode (13, 14). See Column 3, lines 45-50, and Fig 2.

Regarding claims 6 and 14, Tornqvist teaches about photolithography and HCL etching. See, column 42-45, and 60-62.

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Claims 2, 7-8, 10 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tornqvist (USPN 5133036) in view of Ishii et al. (USPN 5321536), Nishimura et al. (USPN 4297004), Ukai et al. (USPN 5223961) and in further view of Ishiguro et al. (USPN 6146928).

Tornqvist as modified has been described above. However, Tornqvist does not teach a type of thin film transistors containing a polycrystalline silicon layer, and does not disclose an external signal supply device connected to light emission panel. Also, Tornqvist does not teach conducting materials of conductors in connection to a gate electrode; drain electrode, and source electrode. Ishiguro on the other hand teaches about a thin film transistor containing a polycrystalline silicon layer (17) with respect to gate electrode (19), source, and drain regions (20), See Fig 2(a), and Fig 2(b), column 4, lines 60-67, and column 5, lines 1-10. In addition Ishiguro teaches about external power source (1010) connected to liquid crystal panel (1006). See Fig 17.

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to further modify Tornqvist's thin film matrix structure to include a polycrystalline silicon layer, use the same material for conductors as well as transistors, and connect an external power source to a light emission panel. One would have been motivated in view of Ishiguro that the desired polycrystalline silicon layer, external signal supply device, and the conductive material for the three electrodes (gate, drain, and source) can be equivalently obtained from Ishiguro's polycrystalline silicon layer, electric power source, and composing materials of a thin film transistor. The use of polycrystalline silicon layer, and electric power source, helps achieve a reliable thin film transistor as taught by Ishiguro.

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Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

4. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Abbas Abduselam** whose telephone number is **(703) 305-8591**. The examiner can normally be reached on Monday through Friday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard Hjerpe**, can be reached at **(703) 305-4709**.

Any response to this action should be mailed to:

Commissioner of patents and Trademarks

Washington, D.C. 20231

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or faxed to:

(703) 872-9314

Hand delivered responses should be brought to crustal park II, Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 2600 customer Service office whose telephone number is (703) 306-0377.

Abbas Abdulsalam

Examiner

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February 07, 2004


XIAO WU
PRIMARY EXAMINER